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VOLUME 56

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

VOLUME 56
HC-130N IN-FLIGHT CREW NOISE

NOVEMBER 1975

AEROSPACE MEDICAL RESEARCH LABORATORY
AEROSPACE MEDICAL DIVISION
Air Force Systems Command
Wright-Patterson Air Force Base, Ohio 45433

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FOR THE COMMANDER

HENNING E. VON GIERKE
Director
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The HC-130N is a USAF aircraft used to search for, locate and recover personnel and/or retrieve material in global air and space operations; it also serves as an air refueling tanker for helicopters. This report provides measured data defining the bioacoustic environments at flight crew/passenger locations inside this aircraft during normal flight operations. Data are reported for 14 locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and

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A-weighted sound levels, preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application", AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 72310418, Measurement of Noise and Vibration Environments of Air Force Operations. Col Justus F. Rose, Jr. conducted the field measurements and performed the data analysis; Capt Nick Farinacci prepared this report.

The authors acknowledge the efforts of Mr. John N. Cole who established the data analysis requirements and assisted in the preparation of this report, and Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton who assisted in the mechanics of data processing.

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INTRODUCTION

The HC-130N is a USAF aircraft used to search for, locate and recover personnel and/or retrieve material in global air and space operations; it also serves as an air refueling tanker for helicopters. This aircraft, which is manufactured by the Lockheed Aircraft Corporation, Lockheed-Georgia Company, is powered by four T56-A-15 turboprop engines rated at 4,910 eshp at 13,820 rpm maximum take-off power. Each engine drives a Hamilton Standard four-blade constant-speed, 4.1 m diameter propeller through a 0.074 gear reduction. The engines are manufactured by the General Motors Corporation, Allison Division.

This volume provides measured data defining the bioacoustic environments produced inside this aircraft. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with operations of the HC-130N aircraft.

This volume is one of a series published by the Aerospace Medical Research Laboratory (AMRL) under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and aerospace ground equipment. The far-field, community-type, noise data in the handbook describe the noise produced during *ground operations* of aircraft, aerospace ground equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. *Refer to Volume 1* (reference 1) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., in-flight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual volumes are published. This index is periodically updated as individual volumes are published, and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of the updated index as it is generated.

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1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application*, AMRL-TR-75-50 (1), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.

IN-FLIGHT NOISE

MEASUREMENTS

All noise measurements were made on-board a standard-configured HC-130N aircraft during typical speed, altitude, and flight maneuver conditions. These levels describe the standard HC-130N environments, but may not be representative of those levels encountered if the aircraft has been configured differently (e.g., major equipment or structural changes).

Acoustic measurements were made at various flight crew and passenger locations. Table 1 lists the measurement location and test conditions as numeric/alphabetic designators which are used on the data pages. The designator 1/A means measurement location 1 and test condition A.

The microphone position was at ear level external to headgear in a region 0.2-0.3 meters from the head when an individual was present. At unoccupied locations, measurements were made at ear level throughout a volume where the head would normally be located. In both cases, the microphone was randomly moved throughout a spherical volume approximately 0.3 meter in diameter and the resultant samples analyzed using a 4- or 8-second integration time to obtain a power-averaged level that effectively smooths out short-duration fluctuations and best describes the exposure.

Although the presence of a crew member or passenger at a measurement location affects the resultant sound field, the magnitude of such effects is generally small and not significant in determining exposure limits or voice communication capabilities. Consequently, no distinction is made in this report between occupied and unoccupied measurement locations.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced inside the HC-130N aircraft at the 14 specified locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data, C-weighted and A-weighted sound levels, maximum permissible time for one exposure per day (AFR 161-35) with and without standard Air Force ear protectors, preferred speech interference level, and perceived noise level are calculated and presented in Table 3. These variety of measures are widely used to assess the effects of noise on personnel and their performance.

TABLE 1

MEASUREMENT LOCATIONS AND TEST CONDITIONS

HC-130N, Eglin AFB, 12 Aug 1971
Serial # 69-5829

LOCATION	*POSITION*	*HEIGHT ABOVE DECK*
1	Between Pilot and Copilot	Seated Head Level
2	Navigator Station	Seated Head Level
3	Radio Operator Station	Seated Head Level
4	Sta. 280 — Left Side Loadmaster Seat	Seated Head Level

TABLE 1 (Continued)

MEASUREMENT LOCATIONS AND TEST CONDITIONS

HC-130N, Eglin AFB, 12 Aug 1971
Serial # 69-5829

LOCATION	*POSITION*	*HEIGHT ABOVE DECK*
5	Sta. 280 — Centerline Standing at Desk	1.5 Meters
6	Sta. 280 — Right Side 2nd Engineer Seat	Seated Head Level
7	Sta. 420 — Left Side Propeller Plane	Seated Head Level
8	Forward Edge of Catwalk	1.5 Meters
9	Sta. 517 — Left Side Forward Bunk	Sleeping Height
10	Sta. 580 — Left Side Aft Bunk	Sleeping Height
11	Sta. 680 — Left Side	Seated Head Level
12	Sta. 680 — Centerline	1.5 Meters
13	Sta. 680 — Right Side	Seated Head Level
14	Sta. 260-337 — Right Side Bunk	Sleeping Height

CONDITION	*DESCRIPTION*
A	Taxiing Torque — 2000 in.-lbs. Engine RPM — 100%
B	Takeoff Torque — 19,600 in.-lbs. Engine RPM — 100%
C	Initial Acceleration, gear and flaps up
D	Climb Torque — 17,000 in.-lbs. Engine RPM — 100% Turbine Ivlet Temperature (TIT) — 900°C Indicated Airspeed (IAS) — 180 KIAS Altitude — 2.0 → 18.0M PA
E	Cruise Torque — 12,500 in.-lbs. Engine RPM — 100% Turbine Inlet Temperature (TIT) — 960°C Indicated Airspeed (IAS) — 220 KIAS Altitude — 18.0M PA
F	Descent Torque — 3000 — 4000 in.-lbs. Engine RPM — 100% Turbine Inlet Temperature (TIT) — 550°C Altitude — 18.0M PA ↘ Indicated Airspeed (IAS) — 250 KIAS
G	Descent Torque — 4000 in.-lbs. Engine RPM — 100% Turbine Inlet Temperature (TIT) — 550°C Indicated Airspeed (IAS) — 180 KIAS Altitude — 4.0 M PA ↘

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 01

02 JAN 75

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NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/A	1/B	1/C	1/D	1/E	1/G	2/A	2/D	2/E	2/G	3/A	3/D
25	93	108	101	86	86	84	78	80	81	80	78	79
31.5	87	102	96	84	85	82	73	81	81	79	72	78
40	88	98	93	81	85	87	73	78	80	79	77	81
50	79	87	86	78	80	77	71	74	81	76	72	81
63	93	102	104	102	105	95	88	94	106	95	91	107
80	82	93	94	92	95	86	77	85	96	86	80	97
100	79	87	85	83	85	85	78	85	83	86	78	85
125	85	90	89	86	92	89	83	89	96	92	86	91
160	82	85	84	80	84	83	82	81	88	83	83	85
200	91	86	88	82	85	84	90	85	88	83	87	84
250	91	86	84	80	81	84	89	78	82	82	88	81
315	88	83	80	80	81	82	89	80	83	84	86	79
400	88	83	81	79	83	83	87	81	83	83	87	82
500	84	80	76	78	82	83	85	79	84	84	83	81
630	79	79	75	78	83	83	81	79	84	84	79	79
800	74	76	72	73	79	79	75	73	80	80	74	75
1000	72	75	71	71	76	77	72	72	78	78	73	74
1250	68	72	69	68	74	75	68	69	75	75	69	71
1600	65	69	67	66	71	72	66	66	74	72	65	68
2000	64	70	68	67	70	71	65	68	72	70	65	70
2500	63	68	67	66	67	68	63	67	69	69	64	67
3150	61	67	66	63	65	67	61	65	66	67	62	67
4000	60	66	65	64	65	65	62	67	66	67	63	68
5000	58	64	63	63	60	62	59	66	62	64	60	66
6300	60	65	65	62	59	60	62	65	61	62	62	66
8000	65	71	70	63	58	60	65	67	61	63	65	68
10000	59	66	63	57	56	57	62	62	59	60	62	64
12500	55	62	61	54	56	57	59	58	59	60	60	63
16000	55	62	61	55	57	58	58	58	60	59	59	63
OVERALL	100	110	107	102	105	99	97	97	107	99	97	108

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 02

02 JAN 75

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NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 3/E	3/G	4/D	4/E	4/F	5/D	5/E	5/F	6/D	6/E	6/F	7/D
25	80	77	84	86	81	83	82	82	84	85	82	78
31.5	81	75	86	86	84	84	84	81	88	84	85	85
40	82	81	85	86	86	79	80	81	88	87	90	86
50	83	74	90	93	85	79	81	76	90	91	84	87
63	108	97	116	120	109	101	106	93	115	116	101	110
80	98	87	106	110	99	91	96	84	105	106	92	100
100	88	88	87	89	82	83	85	83	86	87	82	85
125	93	90	102	105	102	102	99	98	101	102	104	102
160	88	83	91	93	91	90	89	88	91	90	93	92
200	91	84	87	95	90	93	96	91	91	100	91	97
250	85	83	87	89	88	89	92	89	83	92	87	87
315	87	83	85	88	90	85	88	89	83	88	90	86
400	88	84	85	89	91	85	89	90	86	89	89	87
500	88	84	84	87	89	84	87	89	83	87	89	85
630	88	85	82	88	89	81	87	89	82	87	89	83
800	84	79	78	84	85	76	83	84	77	83	84	79
1000	79	77	77	82	84	75	81	82	76	81	82	80
1250	76	74	74	79	81	74	79	79	76	78	80	79
1600	72	70	73	79	79	74	79	77	75	76	77	79
2000	71	71	75	79	79	75	79	76	77	77	77	82
2500	68	68	75	78	76	75	78	75	75	76	74	82
3150	66	67	75	77	76	75	77	74	76	75	74	83
4000	66	68	76	77	74	77	78	71	77	75	73	83
5000	63	66	75	77	71	76	77	69	75	74	71	82
6300	63	66	77	78	69	78	79	67	77	74	70	85
8000	64	68	77	78	69	79	80	66	78	75	69	86
10000	62	63	74	75	66	76	76	64	75	72	68	85
12500	62	62	70	72	70	71	73	67	73	69	73	83
16000	66	63	70	72	64	71	72	62	73	68	67	82
OVERALL	109	100	116	120	110	105	108	102	116	117	107	111

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) 1/3 OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 03

02 JAN 75

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NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 7/E	7/F	8/D	8/E	8/F	9/D	9/E	9/F	10/D	10/E	10/F	11/D
25	78	77	81	81	82	88	85	85	88	85	84	81
31.5	84	83	86	84	83	87	85	85	88	87	86	88
40	87	89	81	81	83	87	88	90	88	87	92	88
50	88	85	85	84	81	91	87	86	93	89	92	88
63	111	107	110	107	102	116	107	105	109	105	108	101
80	101	98	101	98	93	107	97	96	100	96	99	91
100	85	82	85	84	84	88	88	87	90	89	88	87
125	104	93	99	94	92	97	104	91	94	105	88	90
160	93	85	89	86	86	88	93	84	87	94	86	85
200	94	89	95	93	89	91	88	85	90	88	89	87
250	88	87	88	88	87	87	89	87	88	90	90	87
315	87	88	86	87	87	86	86	86	86	88	88	88
400	88	89	86	87	88	85	84	85	85	87	90	88
500	88	88	83	86	87	83	84	84	85	86	88	87
630	87	86	82	86	85	83	82	83	83	85	87	84
800	86	83	78	86	82	80	80	79	78	81	83	77
1000	82	81	77	81	79	79	77	78	76	80	82	75
1250	81	78	78	79	77	78	75	75	74	77	78	72
1600	81	77	76	79	75	76	74	74	73	76	77	71
2000	83	77	78	80	75	78	76	74	75	77	76	73
2500	83	75	77	78	73	77	74	72	73	74	73	70
3150	83	75	79	79	72	78	73	70	72	72	71	68
4000	84	74	79	80	72	79	75	69	73	73	70	68
5000	83	73	79	79	71	78	75	69	72	71	68	68
6300	85	74	82	82	72	80	77	69	74	73	69	69
8000	86	73	84	82	70	83	78	69	76	73	68	70
10000	85	71	80	79	65	81	76	66	74	72	66	68
12500	82	70	77	75	65	76	72	63	71	69	65	66
16000	82	69	79	76	63	76	70	65	71	69	67	66
OVERALL	112	108	111	108	104	117	109	106	110	109	109	103

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 04

02 JAN 75

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NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 11/E	11/F	12/D	12/E	12/F	13/D	13/E	13/F	14/D	14/E	14/F
25	84	85	78	80	81	84	83	85	84	82	81
31.5	88	88	84	87	84	90	90	88	88	85	83
40	92	93	82	82	86	94	91	93	87	89	89
50	91	89	84	81	81	96	91	92	87	85	82
63	103	95	102	92	89	111	104	99	110	101	100
80	94	88	93	87	86	101	94	91	100	91	91
100	90	87	86	87	88	87	87	88	86	83	83
125	94	88	91	95	88	92	95	90	102	107	99
160	86	84	85	88	87	86	89	88	91	94	90
200	87	87	87	86	87	88	87	88	96	95	89
250	88	87	86	87	89	85	86	88	84	90	87
315	89	89	88	89	91	87	88	89	86	86	88
400	89	90	88	90	92	88	90	91	85	86	88
500	88	88	88	89	90	88	88	89	84	86	88
630	86	87	84	86	89	84	86	88	81	86	87
800	81	82	78	82	84	78	82	83	75	81	83
1000	79	80	76	80	82	76	81	82	73	79	80
1250	76	77	73	77	79	72	79	78	72	76	77
1600	74	75	72	75	77	71	78	76	72	76	75
2000	76	76	74	75	78	72	78	77	74	77	75
2500	73	73	71	73	75	69	74	74	73	76	74
3150	70	70	70	70	72	68	72	71	73	75	74
4000	70	69	70	70	71	68	71	70	73	76	71
5000	68	66	69	68	68	67	68	67	73	75	68
6300	68	65	71	69	67	68	69	66	75	77	66
8000	69	65	71	69	67	69	69	66	76	78	65
10000	66	63	69	67	64	68	67	63	74	75	63
12500	65	63	67	65	63	65	65	61	69	71	64
16000	64	63	67	64	63	65	64	62	67	69	60
OVERALL	105	101	104	101	100	112	106	103	111	108	104

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
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PAGE J1

NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/A	1/B	1/C	1/D	1/E	1/G	2/A	2/D	2/E	2/G	3/A	3/D
31.5	95	109	102	89	90	89	80	84	85	84	81	84
63	93	103	104	102	105	96	88	95	106	96	91	107
125	87	92	91	88	93	91	86	91	97	93	88	93
250	95	90	90	85	87	88	94	86	90	88	92	86
500	90	86	83	83	87	88	90	84	88	88	89	86
1000	76	79	75	76	81	82	77	76	83	83	77	78
2000	69	74	72	71	74	75	69	72	76	75	69	73
4000	64	70	69	68	69	70	66	71	69	71	67	71
8000	67	73	72	66	63	64	68	70	65	67	68	71
16000	58	65	64	57	59	60	61	61	62	63	62	66
OVERALL	100	110	107	102	105	99	97	97	107	99	97	108

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 02

02 JAN 75

PAGE J2

NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 3/E	3/G	4/D	4/E	4/F	5/D	5/E	5/F	6/D	6/E	6/F	7/D
31.5	86	83	90	91	89	87	87	86	91	90	91	88
63	108	97	116	120	109	101	106	93	115	117	101	110
125	95	93	103	105	102	102	99	98	101	102	105	103
250	93	88	91	96	94	95	98	94	92	101	94	97
500	93	89	88	93	94	89	92	94	88	92	94	90
1000	86	82	81	87	88	80	86	86	81	86	87	84
2000	75	74	79	83	83	79	83	81	80	81	81	86
4000	70	71	80	81	78	81	82	77	81	79	78	87
8000	67	71	81	82	73	82	83	71	81	79	74	90
16000	67	66	73	75	71	74	75	68	76	72	74	85
OVERALL	109	100	116	120	110	105	108	102	116	117	107	111

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 03
02 JAN 75
PAGE J3

NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 7/E	7/F	8/D	8/E	8/F	9/D	9/E	9/F	10/D	10/E	10/F	11/D
31.5	89	90	88	87	87	92	91	92	93	91	93	92
63	111	108	111	108	102	116	107	106	110	106	109	101
125	104	94	99	95	94	98	104	93	96	105	92	93
250	95	93	96	95	92	93	92	91	93	94	94	92
500	92	93	89	91	92	88	88	89	89	91	93	91
1000	88	86	82	88	84	83	82	82	81	84	86	80
2000	87	81	82	84	79	81	79	78	78	80	80	76
4000	88	78	84	84	76	83	79	74	77	77	74	73
8000	90	77	87	86	75	86	82	73	79	77	72	74
16000	85	72	81	79	67	79	74	67	74	72	69	69
OVERALL	112	108	111	108	104	117	109	106	110	109	109	103

TABLE: 2 — MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION: OMEGA 3.2 TEST 71-014-058 RUN 04 02 JAN 75 PAGE J4

NOISE SOURCE/SUBJECT: HC-130N AIRCRAFT INFLIGHT NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 11/E	11/F	12/D	12/E	12/F	13/D	13/E	13/F	14/D	14/E	14/F
31.5	94	95	87	89	89	95	93	94	91	91	90
63	104	96	103	93	91	112	105	100	110	101	101
125	96	91	93	96	92	94	96	93	102	107	100
250	92	92	92	92	94	92	92	93	96	96	93
500	92	93	92	93	95	92	93	94	88	91	92
1000	84	85	81	85	87	80	86	86	78	84	85
2000	79	80	77	79	81	76	82	80	78	81	79
4000	74	74	74	74	75	72	75	74	78	80	76
8000	73	69	75	73	71	73	73	70	80	81	70
16000	67	66	70	68	66	68	67	64	71	73	65
OVERALL	105	101	104	101	100	112	106	103	111	108	104

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 01
02 JAN 75
PAGE H1

NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

	LOCATION/CONDITION											
	1/A	1/B	1/C	1/D	1/E	1/G	2/A	2/D	2/E	2/G	3/A	3/D
HAZARD/PROTECTION												
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR												
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR												
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)												
NO PROTECTION												
OASLC	99	107	105	102	105	98	97	97	106	98	96	107
OASLA	89	87	86	84	88	88	89	85	90	88	88	87
T	202	285	339	480	240	240	202	404	170	240	240	285
HGU-2A/P HELMET WITH H-154												
OASLA*	86	83	83	80	83	81	85	80	86	82	84	84
T	339	571	571	960	571	807	404	960	339	679	480	480
HGU-2A/P HELMET WITH H-154(A)												
OASLA*	82	81	81	78	81	77	81	76	83	78	80	83
T	679	807	807	960	807	960	807	960	571	960	960	571
HGU-2A/P HELMET WITH CUSTOM LINER												
OASLA*	88	85	84	82	86	85	88	82	88	86	86	86
T	240	404	480	679	339	404	240	679	240	339	339	339
V-51R EAR PLUGS												
OASLA*	69	69	68	65	68	66	68	63	70	66	67	70
T	960	960	960	960	960	960	960	960	960	960	960	960
H-157 IN-FLIGHT COMMUNICATION UNIT												
OASLA*	77	79	80	77	80	75	76	74	82	75	75	82
T	960	960	960	960	960	960	960	960	679	960	960	679
COMMUNICATION												
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)												
PSIL	78	80	77	77	81	82	79	77	83	82	79	79
ANNOYANCE												
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)												
TONE CORRECTION (C IN DB)												
PNLT	103	105	105	103	106	102	102	101	108	103	102	107
C	1	1	1	1	1	1	1	1	2	1	1	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: MEASURES OF HUMAN NOISE EXPOSURE

3

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 02

02 JAN 75

PAGE H2

NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

	LOCATION/CONDITION											
	3/E	3/G	4/D	4/E	4/F	5/D	5/E	5/F	6/D	6/E	6/F	7/D
HAZARD/PROTECTION												
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR												
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR												
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)												
NO PROTECTION												
OASLC	108	99	116	119	109	105	107	101	115	116	107	111
OASLA	93	89	94	98	95	92	94	94	94	96	95	96
T	101	202	85	42	71	120	85	85	85	60	71	60
HGU-2A/P HELMET WITH H-154												
OASLA*	87	82	92	96	90	89	90	88	92	95	91	92
T	285	679	120	60	170	202	170	240	120	71	143	120
HGU-2A/P HELMET WITH H-154(A)												
OASLA*	85	78	91	95	87	84	86	83	90	93	86	88
T	404	960	143	71	285	480	339	571	170	101	339	240
HGU-2A/P HELMET WITH CUSTOM LINER												
OASLA*	90	86	93	97	93	90	92	91	92	95	93	92
T	170	339	101	50	101	170	120	143	120	71	101	120
V-51R EAR PLUGS												
OASLA*	73	67	78	81	74	70	73	71	77	79	73	74
T	960	960	960	609<	960	960	960	960	960	960	960	960
H-157 IN-FLIGHT COMMUNICATION UNIT												
OASLA*	84	76	91	95	86	83	84	83	90	92	84	87
T	480	960	143	71	339	571	480	960	170	120	480	285
COMMUNICATION												
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)												
PSIL	85	82	83	88	88	83	87	87	83	86	87	87
ANNOYANCE												
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)												
TONE CORRECTION (C IN DB)												
PNLT	109	103	116	120	113	111	112	109	115	117	113	115
C	1	1	2	2	2	3	2	2	2	2	3	2

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.
< TIME LIMIT SET TO AVOID WHOLE BODY EFFECTS (WHOLE BODY LIMITS EXTRAPOLATED AT -4 DB PER DOUBLE TIME).

TABLE: 3 MEASURES OF HUMAN NOISE EXPOSURE

IDENTIFICATION: OMEGA 3.2 TEST 71-014-058 RUN 03 02 JAN 75 PAGE H3

NOISE SOURCE/SUBJECT: HC-130N AIRCRAFT INFLIGHT NOISE LEVELS

OPERATION:

	LOCATION/CONDITION											
	7/E	7/F	8/D	8/E	8/F	9/D	9/E	9/F	10/D	10/E	10/F	11/D
HAZARD/PROTECTION												
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR												
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR												
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)												
NO PROTECTION												
OASLC	112	107	110	108	103	116	108	106	109	108	108	102
OASLA	97	93	94	94	92	95	93	90	91	94	93	91
T	50	101	85	85	120	71	101	170	143	85	101	143
HGU-2A/P HELMET WITH H-154												
OASLA*	92	87	90	88	86	92	90	85	88	91	88	85
T	120	285	170	240	339	120	170	404	240	143	240	404
HGU-2A/P HELMET WITH H-154(A)												
OASLA*	88	85	87	85	82	91	86	83	86	87	85	82
T	240	404	285	404	679	143	339	571	339	285	404	679
HGU-2A/P HELMET WITH CUSTOM LINER												
OASLA*	93	90	91	90	89	93	91	88	89	92	91	88
T	101	170	143	170	202	101	143	240	202	120	143	240
V-51R EAR PLUGS												
OASLA*	75	72	74	72	70	78	72	70	72	73	73	69
T	960	960	960	960	960	960	960	960	960	960	960	960
H-157 IN-FLIGHT COMMUNICATION UNIT												
OASLA*	88	83	86	84	80	91	85	81	85	86	84	79
T	240	571	339	480	960	143	404	807	404	339	480	960
COMMUNICATION												
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)												
PSIL	89	86	84	88	85	84	83	83	83	85	86	83
ANNOYANCE												
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)												
TONE CORRECTION (C IN DB)												
PNLT	117	111	114	112	107	116	112	108	111	113	109	105
C	3	2	2	1	1	1	2	1	1	2	0	1

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE: 3 MEASURES OF HUMAN NOISE EXPOSURE

IDENTIFICATION:
OMEGA 3.2
TEST 71-014-058
RUN 04
02 JAN 75
PAGE H4

NOISE SOURCE/SUBJECT:
HC-130N AIRCRAFT
INFLIGHT NOISE LEVELS

OPERATION:

	LOCATION/CONDITION										
	11/E	11/F	12/D	12/E	12/F	13/D	13/E	13/F	14/D	14/E	14/F
HAZARD/PROTECTION											
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR											
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR											
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)											
NO PROTECTION											
OASLC	105	100	103	100	100	111	105	103	110	108	104
OASLA	92	92	91	93	94	92	93	93	92	95	93
T	120	120	143	101	85	120	101	101	120	71	101
HGU-2A/P HELMET WITH H-154											
OASLA*	86	85	85	86	87	88	87	86	91	92	87
T	339	404	404	339	285	240	285	339	143	120	285
HGU-2A/P HELMET WITH H-154(A)											
OASLA*	83	81	82	82	83	87	83	83	87	87	83
T	571	807	679	679	571	285	571	571	285	285	571
HGU-2A/P HELMET WITH CUSTOM LINER											
OASLA*	90	89	89	90	91	90	90	91	91	93	90
T	170	202	202	170	143	170	170	143	143	101	170
V-51R EAR PLUGS											
OASLA*	71	70	70	71	72	74	71	72	73	73	71
T	960	960	960	960	960	960	960	960	960	960	960
H-157 IN-FLIGHT COMMUNICATION UNIT											
OASLA*	81	77	80	78	78	86	81	79	87	86	81
T	807	960	960	960	960	339	607	960	285	339	807
COMMUNICATION											
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)											
PSIL	85	86	83	86	88	83	87	87	81	85	86
ANNOYANCE											
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)											
TONE CORRECTION (C IN DB)											
PNLT	108	105	107	107	107	111	109	107	112	114	109
C	1	0	1	1	0	1	1	0	2	3	2

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.